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STATE PROGRAMS TO ASSIST COMMUNITIES IN DISTRICT HEATING AND COOLING

November 1988

Prepared for the

U.S. Department of Energy

by

The United States Conference of Mayors

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Washington, D.C. 20006

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Contract No. DE-FG01-87CE26539

This report was prepared by The United States Conference of Mayors under a contract from the United States Department of Energy. The statements, findings, conclusions and opinions expressed herein do not necessarily reflect those of the Department of Energy or of the Federal government.

The U.S. Department of Energy and the U.S. Conference of Mayors express their gratitude to all the state officials who assisted by providing the information used in the preparation of this document.

November 1988

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Introduction

District heating long has been recognized by the international community as one of the more energy-efficient methods of providing heat to end users. In general, the U.S. Department of Energy supports more efficient use of energy because this slows down growth in energy demand, which in turn can extend the availability of low-cost fossil energy resources, thus moderating price increases.

The concept of district heating is simple. Use one source of thermal energy to heat (and sometimes cool) more than one building—the number of buildings can be anywhere from two to several hundred. The technology is not quite that simple; but it is a proven technology, with thousands of operating systems around the world.

Most district heating systems in the United States are small ones, “institutional” systems serving groups of buildings like college campuses, military bases, office complexes and industrial parks. Larger systems, serving up to several hundred customers, once were common in America’s cities. The systems often were owned and operated by the local electric utilities, and heat was supplied by the excess steam from electrical generating plants. But the systems began to decline in the second quarter of the century, with changes in power plant technology, size, and locations more distant from downtowns. Oil was inexpensive, and buildings used individual boilers. Many systems closed across the country; others continued to operate, but were reduced to a fraction of their peak size.

Slowly, district heating is making a comeback. In several cities, older, deteriorating systems have been purchased and revitalized by cities, nonprofit organizations, or entrepreneurs. In other cities, new systems employing modern technology have been developed.

In some countries, national policy promotes the use of district heating and cooling (DHC). It has been reported that more than 40 percent of domestic heating and cooling requirements are met by district heating and cooling in Denmark, and 70 percent in the Soviet Union. But in the United States, modern district heating and cooling is still in its infancy.

District heating has much to recommend it to cities and to energy users:

Reduced capital costs—centralized heating systems offer users significant savings in capital investment by eliminating the need to buy and install individual on-site boiler systems.

Reduced operating and maintenance costs—District heating reduces operating and maintenance costs by transferring these responsibilities from the building owner or operator to the centralized system.

Increased building space use—District heating systems permit more efficient use of building space by precluding the need to allot space for on-site boilers. The space saved can be utilized more profitably for other purposes.

Improved air quality—Replacing numerous individual boiler systems with one central heating plant reduces emissions and contributes to reduced air pollution.

Low cost—District heating systems are highly capital intensive, but because they can use fuels such as coal, solid waste and cogenerated thermal energy, their fuel costs can be significantly lower than competing systems that use oil or natural gas.

Community and economic development—District heating can promote economic development and revitalization of cities’ downtown areas. The availability of a cost-effective, centralized heating system can serve to attract industry and business.¹

The older district heating systems usually consisted primarily of the heat source and a single pipe to provide steam to customers. The condensate at the end of the line was discharged into the city’s wastewater system. Comparing those systems to modern systems is a little like comparing a Model T to a 1988 automobile. Modern district heating/cooling systems often use hot water instead of steam—it can be transported farther, is easier to handle, and more efficient. The water (or condensate, in the case of steam systems) is returned to the energy source and recovered instead of being discharged. There may be a chilled water loop for cooling, or buildings can have individual chillers for air conditioning, driven by the steam or hot water. There are various sources for the thermal energy—coal, oil, or gas-fired boilers; waste-to-energy plants; waste heat from electrical generating stations or industrial boilers. Some systems use geothermal energy.

Energy efficiency is greatly increased by cogeneration—using a single facility to produce both electrical energy and thermal energy for a district heating system.

There are several reasons why DHC’s comeback in the U.S. is slow—most of them financial.

Capital costs for the system are high. The economics can be tricky, especially right now when oil prices are stable. For a system to be economically viable, long-term contracts must be signed before construction is begun; this means selling a concept to potential customers and persuading them to give up what they may perceive as control over their own heating/cooling systems to hook into a community system. Local jurisdictions with tight budgets often are hard-pressed to find the funds necessary for feasibility studies and up-front development costs. Programs sponsored by the U.S. Department of Energy (DOE) and the U.S. Department of Housing and Urban Development (HUD) have assisted a number of communities in feasibility studies and development, and have resulted in successful urban DHC projects.

The State Role

Several states, seeing the opportunity to assist cities simultaneously with energy and economic development, have instituted DHC programs. These programs typically provide funds, and sometimes technical assistance, to assist cities with feasibility studies and getting DHC projects off the ground. Some states have long-term programs; others have short-term programs using funds specifically appropriated for that purpose—for example, a single round of grants. Some states have used oil overcharge payback funds as a source of support for district heating programs. In some cases, states have increased the effect of their funding by applying funds as a match for DOE or HUD grants.

The purpose of this document is to examine what states across the country are doing to assist their local jurisdictions in development of district heating and cooling. Fifteen states and the District of Columbia were found to have active programs in this area; these programs are described briefly. A few other states have had district heating programs in the past, but do not have active programs at this time. In each case, a contact person at the state level is listed.

The Department of Energy encourages states to develop active programs to assist communities in district heating and cooling. States without district heating programs may use this document to discover what other states are doing; local officials may use it to seek state assistance where it is available, and to encourage the establishment of state programs where they do not exist.

The following are sources of further information on district heating and cooling:

Floyd J. Collins
Program Manager
Office of Buildings and Community Systems
Room GF-253
U.S. Department of Energy
1000 Independence Avenue, S.W.
Washington, D.C. 20585
(202) 586-9191

Wyndham Clarke
Office of Environment and Energy
U.S. Department of Housing and Urban Development
Room 7156
451 7th Street, S.W.
Washington, D.C. 10410
(202) 755-5504

International District Heating and Cooling Association
1101 Connecticut Avenue, N.W.
7th Floor
Washington, D.C. 20036
(202) 429-5111

The United States Conference of Mayors
Office of Development Programs
1620 Eye Street, N.W.
Washington, D.C. 20006
(202) 293-7330

Public Technology, Inc.
1301 Pennsylvania Avenue, N.W.
Suite 704
Washington, D.C. 20004
(202) 626-2443

The Alliance to Save Energy
1925 K Street, N.W.
Suite 206
Washington, D.C. 20006
(202) 857-0666

National Research Council
National Academy of Sciences/National Academy of Engineering
2101 Constitution Avenue, N.W.
Washington, D.C. 20418

¹ Committee on District Heating and Cooling, Energy Engineering Board and Building Research Board, Commission on Engineering and Technical Systems, and National Research Council, *District Heating and Cooling in the United States*, National Academy Press, Washington, D.C., 1985.

States with District Heating Programs

ALABAMA

A state-funded feasibility study for a district heating system in Montgomery was completed early this year. The state provided \$40,000 in oil overcharge funds for the study, which yielded results indicating very favorable economics for a district heating loop that would heat the state capitol complex (13 buildings) and a hospital. The state is now working with the legislature to proceed with a bond issue and construction.

The only other district heating system in Alabama, outside of those in college campuses, is in Birmingham. The 60-year-old system is operated by a utility and heats most of the large buildings downtown.

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Division Chief
Science, Technology,
and Energy Division
Department of Economics
and Community Affairs
3465 Norman Bridge Road
P.O. Box 2939
Montgomery, AL 36105-0939
(205)284-8952

Also: Russel Moore
Engineer
State Energy Office
(205)284-8944

CALIFORNIA

The California Energy Commission has a Geothermal Grant and Loan Program that funds district heating projects for local jurisdictions. Financial help is offered to cities, counties, and special districts; public utility districts having less than 50 megawatts of generating capacity; local governing bodies having joint agreements; and Native American Indian governments.

Two district heating systems are currently operating in the cities of San Bernadino and Susanville. The San Bernadino district heating system received \$4.6 million from the state's energy commission, \$539,000 from the city of San Bernadino, and \$785,000 from San Bernadino County.

Funding for the Susanville district heating system totalled \$5.9 million with \$1.2 million from the California Energy Commission, \$251,807 from the city of Susanville, \$120,782 from Lassen County, \$2 million from DOE, \$929,000 from HUD, \$1.3 million from the U.S. Bureau of Reclamation, and \$100,000 from the Farmer's Home Administration.

Contact: Roger Peak
Geothermal Energy Specialist
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814
(916) 324-3505

COLORADO

A state-funded feasibility study is currently underway for a geothermal district heating project in Ouray that would service a school and local government buildings in the downtown area. The state has provided \$300,000 of oil overcharge funds for the study.

Contact: Janet Hartsfield
Assistant Director
Colorado Office of Energy Conservation
112 East 14th Avenue
Denver, CO 80203
(303)894-2144

CONNECTICUT

The state has awarded grants to finance feasibility studies for district heating projects in three communities: Hartford, Stamford and New Haven.

Hartford received \$98,800 in oil overcharge funds from the state for a Phase I study to look at the feasibility of installing a district heating system that would connect two public housing projects to an existing district heating loop.

Stamford was awarded \$72,200 in oil overcharge funds for a Phase I study that found a district heating project both economically and technically feasible in the downtown area.

In New Haven, the state provided \$209,000 in oil overcharge funds for a Phase II study to develop a marketing and design strategy for a district heating project.

Contact: Carl Nigen
Planning Analyst
Energy Division
Office of Policy & Management
80 Washington Street
Hartford, CT 06106
(203)566-2800

Also: Tom Skarupa
(same address and telephone number)

DISTRICT OF COLUMBIA

A Phase I feasibility study, co-funded by the D.C. Energy Office and the U.S. Department of Housing and Urban Development, has just been completed. Plans are now underway for a Phase II study that will look in more detail at the economic and technical feasibility of installing a district heating system to serve commercial customers and a public housing complex in Northwest D.C. This second study will also be co-funded by the D.C. Energy Office and HUD.

Another District-funded study is being conducted to upgrade the existing steam system at St. Elizabeth's Hospital. The study, which is nearly completed, is looking into the feasibility of converting the system to hot water.

The district is also looking at the district heating systems on Capitol Hill and the GSA plant for possible upgrading and conversion to hot water.

Contact: Jack Werner
Special Assistant to Director
D.C. Energy Office
613 G Street, NW
Room 500
Washington, D.C. 20001
(202)727-1800

HAWAII

The state has co-funded, along with the U.S. Department of Energy, the chilled water loop system at the University of Hawaii—a project begun in 1979 under the sponsorship of the university and the state conservation office.

Contact: Howard Wiig
Energy Analyst
Conservation Branch
Energy Division
Department of Planning and Economic Development
335 Merchant Street
Room 110
Honolulu, HI 96813
(808)548-4091

MISSOURI

Early this year, the state provided the city of St. Louis with \$120,000 in oil overcharge funds to look into the feasibility of adding a chilled water loop to the existing district heating system in downtown St. Louis. The study is expected to be completed by June 30, 1989.

Contact: Bob Jackson
Director
Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102
(314)751-4000

Also: John Buchanan
Planner III
Same Office
(314)751-2254

NEVADA

The state has funded geothermal district heating projects in Elko, Wells and Carlin. It has also played a role in facilitating the entry of Piper Hydro Company (now Catalyst Energy Systems) into Nevada, which has resulted in the development of district heating projects that are now providing heat to over 1,000 units throughout the state. The state kept in close touch with the company, played an inviting and encouraging role, and sponsored the company for a license from a contracting board.

Contact: James Hawke
Chief of Energy and Community Development
Governor's Office of Community Service
1100 East Williams, Suite 117
Carson City, NV 89710
(702)885-4420

NEW JERSEY

The state's Office of Energy Planning has a district heating/cogeneration program that is run by a staff of three people. District heating projects being funded by the program include those in Jersey City, Camden and Atlantic City.

In Jersey City, the state provided \$55,000 to cover the full cost of a pre-feasibility study to identify the potential users and the cost effectiveness of a district heating project. The study was completed in July 1988 with favorable reports on the project in question.

In Camden, the state provided \$25,000 for a study that identified the first leg of a refuse-fired district heating system that will serve Rutgers University and Riverfront State Prison.

Over the past few months, the state has been actively pursuing the possibility of developing a district heating project in Atlantic City. Preliminary investigations have looked at the possibility of a district heating system that would service the Northeast Inlet, a redevelopment area slated for renovation. State officials have met with the mayor and initial contacts have been made with private developers who have indicated some interest in the project and the possibility of a public-private venture. The initial feeling is that upcoming studies will yield favorable reports for the project.

The state expects to continue playing a significant role in developing additional district heating projects, especially in connection with the development of waste-to-energy facilities that are being planned for every one of the 21 counties. In July 1988, the state announced the creation of a low-interest subsidy and revolving loan program to finance district heating/waste-to-energy projects with funds of up to \$3 million.

Contact: Rich Brandt
Manager
District Heating/Cogeneration Program
Office of Energy Planning and Conservation Operations
New Jersey Department of Commerce and Economic Development
101 Commerce Street
Newark, NJ 07102
(201)648-3902

NEW YORK

New York's district heating and cooling program is within the New York State Energy Research and Development Authority (NYSERDA), which has been involved with DHC since the early 1980's.

NYSERDA is a research and development organization, with an annual research budget of about \$10 million. Funding is from a variety of sources, including a tax on ratepayers—i.e., on the sale of electricity and gas; \$2.5 million a year from the Power Authority of the State of New York under a five-year agreement; and from other sources. In addition, in 1987 the state legislature mandated that NYSERDA receive \$1.5 million in state oil overcharge funds for technology R&D, including district heating, cogeneration, alternate fuels, and innovative electric generation technologies. NYSERDA has the authority to issue bonds.

Over the past six years, out of NYSERDA's approximately \$60 million in R&D grants and contracts, about \$1.9 million has been for DHC projects.

NYSERDA awards grants to localities for Phase I and Phase II DHC feasibility studies. It also assists the communities in such areas as marketing, technology, and working for any state legislation needed to help the projects. In addition, NYSERDA has supported some communities' proposals for federal programs, co-funding the projects with the U.S. Department of Energy (DOE) and Department of Housing and Urban Development (HUD).

NYSERDA's three major DHC successes to date are the systems in the cities of Jamestown, Rochester and Buffalo.

In Jamestown, NYSERDA funded Phase I and Phase II studies which, with strong local leadership, resulted in the construction of a system that began operating in 1984 and was expanded shortly thereafter.

In Rochester, the utility planned to abandon its district heating system. NYSERDA, along with local government and business leaders, put together a user cooperative that bought the system and is currently operating it.

In Buffalo, NYSERDA assistance resulted in a district heating system that has completed its second winter; there are five large buildings on the system, and it is expected to grow.

Other communities currently being assisted by NYSERDA include:

- *Dunkirk*—A Phase I study involving possible DHC for a planned harborfront development is being completed.
- *Onondaga County and the City of Syracuse*—Following a Phase I study sponsored by NYSERDA and DOE, a Phase II study is about to begin.
- *Broome County and the City of Binghamton*—A Phase I study has been completed, and a Phase II study is being considered.
- *Albany County and the City of Albany*—A Phase II study is underway with assistance from NYSERDA and HUD.
- *Nassau County*—NYSERDA is working with Nassau District Energy Co. (a subsidiary of Trigen Energy Corp.) to expand the Nassau County district heating system to include a hospital, a prison, and part of downtown Mineola. The increased thermal load would be used to develop a 50 MW electric generating plant.
- *Port Jefferson*—A Phase I study has been completed, and additional work is being discussed.

1988 Initiatives

Using the oil overcharge monies, NYSERDA issued an RFP in early 1988. Each grant was to be matched by an equal amount from the proposer. Of the \$1.5 million, \$500,000 was for complex Phase II studies, in amounts of \$100,000 each; the remaining \$1 million was for Phase I studies of \$25,000 each. This was across the technology areas mentioned above; about 10 proposals were for district heating projects. The cities of Auburn, Long Beach, Troy, Glen Cove, Jamestown, Buffalo, and the Rochester District Heating Cooperative are in the process of negotiating contracts with the state for district heating projects. Funding is expected to range from \$10,000 to \$100,000.

(Continued on following page)

NEW YORK (continued)

State and Local Funding

NYSERDA's strategy is to give more help to communities in the early years of district heating development, so that the communities can get the projects started and then assume more of the financial burden as the project progresses. Following is a breakdown of NYSERDA and local funding (including construction funds), by year:

<i>Year</i>	<i>NYSERDA</i>	<i>Local</i>
1982	\$ 50,000	\$ 40,000
1983	350,000	100,000
1984	360,000	1.35 million
1985	80,000	3 million
1986	670,000	550,000
1987	430,000	10.7 million

To date, NYSERDA has contributed about \$1.4 million into the successful projects in Jamestown, Rochester and Buffalo; the localities have contributed about \$15.6 million, for a total of about \$17 million.

According to NYSERDA estimates, these expenditures have resulted in about 160 construction job-years, almost 400 total job-years, and about \$44 million benefits to the local economies as the dollars are turned over an average of three times.

Other benefits directly affect the cities' economic development. In Jamestown, the system has resulted in the lowering of heating costs by 20-45%; in Rochester, more than 40%; and in Buffalo, about 20-30%. In Jamestown, a new telephone company facility has been built and is on the system, bringing about 100 new jobs to the city; also, there is an industrial incubator on the system. Part of Jamestown's economic development strategy is to market itself as having low electric costs (because of the municipally-owned utility) and low thermal energy costs.

Future Activities

NYSERDA plans a project to help address some of the marketing issues related to DHC, both in marketing the concept of district heating and cooling to the communities and in helping the communities to market the system to building owners.

Also, NYSERDA plans a project in the near future to identify potential sites in New York State that have the technical and economic long-term feasibility for city-wide DHC systems. Over a five- or six-year period, NYSERDA will work with these communities to develop the district heating systems.

Contact: Fred V. Strnisa
New York State Energy Research & Development Authority
2 Rockefeller Plaza
Albany, NY 12223
(518)465-6251

PENNSYLVANIA

In 1986, the Governor's Energy Council commissioned a study to assess the state of district heating and cooling in the state of Pennsylvania. The study identified the location of operating and abandoned DHC facilities, their current status, reason for abandonment if no longer operating, and their potential for future operations. The study identified 38 communities with significant potential for district heating.

Following this study, a two-year, \$414,000 program of Phase I feasibility assessments was instituted. The program funded a total of 13 sites that included abandoned systems, operating systems that maybe expanded, and sites for new systems. Between late 1987 and August 1988, the Governor's Energy Council provided 80 percent of the funds for studies at the following sites:

<i>Site</i>	<i>State Funds</i>
City of Chester	\$32,000
City of Easton	32,000
Borough of Chambersburg	32,000
Wilkes-Barre Steam Heat Authority	32,000
Chester County	32,000
Montgomery County	29,470
Philadelphia Thermal Energy Corporation	20,000
Pittsburgh Allegheny County Thermal	35,000
Borough of Kutztown	31,200
Community Central Energy Corporation	20,000
City of Erie	35,000
Mercer County	15,500
City of Harrisburg	35,000

The municipalities provided the remaining 20 percent. Sources of the state funds were the state Energy Extension Service, the State Energy Conservation Program, and oil overcharge funds.

The state is considering a Phase II feasibility assessment grant program if funds can be obtained.

Contact: Joseph Deklinski
Associate Director
Governor's Energy Council
116 Pine Street
Harrisburg, PA 17105
(717) 783-9981

RHODE ISLAND

A feasibility study for a district heating system in the city of Providence was completed in late August by Burns and Roe, Inc. The state provided \$45,000 in oil overcharge funds for the study, which yielded favorable results. A committee made up of the governor and state and city representatives is now reviewing the study.

Contact: Roger Buck
Former Director and Consultant
Governor's Office of Energy Assistance
295 Westminister Mall
Providence, RI
(401)277-3370

Also: Charles Mansolillo
Director
Same Office

Janice McClanaghan
Deputy Director
Same Office

UTAH

The state is currently working with Salt Lake City on a project to replace the city's existing district heating system which is old and incapable of generating new customers. A feasibility study was completed in July 1988, and the city has put out an RFQ and selected an engineering firm to conduct further studies for the project. The cost of the project is estimated at \$13 million, though exactly how it will be financed is yet to be determined. The state has not committed any funds to the project but is playing a supportive role by supplying one of its state engineers to serve on the Review and Selection Committee for the RFP/RFQ that was sent out by the city.

Contact: Richard Anderson
Director
Utah Energy Office
355 West North Temple
3 Triad Center, Suite 450
Salt Lake City, UT 84180-1204
(801)538-5428

Also: Brit Reed
State Engineer
(Same address as above)

VIRGINIA

In April 1988, as part of an economic development effort, the state presented a program for cities to apply for state funding for DHC feasibility studies. The state is willing to fund 50 percent of the cost of conducting these studies but, to date, no interest has been expressed by any localities.

Contact: Samuel Bird
Director
Division of Energy
Department of Mines, Minerals, and Energy
2201 West Broad Street
Richmond, VA 23220
(804)367-6851

WASHINGTON

The State Energy Office has been a prime mover in the district heating projects in Takoma, Seattle and Olympia. The assistance it is providing to these communities is being financed by \$400,000 in oil overcharge funds (released in March 1988) to be used over a period of three years.

In Takoma, the state has provided \$55,000 for a district heating project that will serve the city's historic warehouse district which is slated for major renovation. A Phase I feasibility study was completed in October 1987 and yielded favorable results. A proposal to HUD for Phase II funds is being submitted. As a first step in the renovation process, the city is actively working on plans to convert the old train station into a federal courthouse and is presently negotiating a lease with GSA. A district heating system in the warehouse district area is especially promising because the area is adjacent to downtown Takoma, making expansion of the system in the future a real possibility.

In Seattle, the state is working with METRO (the agency that handles the sewage service for Seattle and King County and manages the transit system) to develop a project that would use sewage effluent

from a treatment plant as a heat source in conjunction with a heat pump. The 12-mile effluent pipeline has 8 tap sites and efforts are now concentrated on marketing the taps with nearby industries. The state has provided \$15,000 to fund a feasibility study for the project.

In Olympia, the state has provided \$30,000 for feasibility studies for the expansion of the district heating system that is servicing the state capitol complex. The state is working with the city to cut costs on the project. Efforts are being made to try to coincide plans for the heating loop expansion with the city's plans to expand the sewer line capacity, so that distribution lines for the heating loop can be laid down simultaneously as the roads are dug up for the sewer line project.

Contact: Stuart Simpson
 Hydrothermal Resource Specialist
 Washington State Energy Office
 400 East Union, First Floor, ER-11
 Olympia, WA 98504
 (206)586-5074

Also: Gordon Bloomquist
 Director, District Heating Program
 (206)586-5074

WYOMING

The city of Wheatland is currently conducting a demonstration project using waste heat. The \$500,000 project is being funded by the city of Wheatland, the State Farm Loan Board, and oil overcharge funds.

The campus of the University of Wyoming has a small scale district heating system; a district heating system in Cheyenne was discontinued in 1970.

Contact: Ed Maycumber
 Energy Division Lead
 Economic Development and Stabilization Board
 Herschler Building
 122 West 25th Strret
 Cheyenne, Wyoming 8200
 (307)777-7284

States without District Heating Programs

ALASKA

Alaska does not have a program to fund district heating in the state, however, the state conducts preliminary energy studies for smaller communities searching for alternative energy sources, including district heating.

Fairbanks utilizes a steam loop in its downtown area. Also, the state of Alaska undertakes small projects in rural communities where waste heat retrofits are used for single buildings. One such project is in the community of Bethel where waste heat is used for a hospital.

Contact: Pat Woodell
Development Specialist
Alaska Power Authority
P.O. Box 190869
Anchorage, AK 99519
(907)561-7877

ARIZONA

Due to budget limitations, Arizona does not have a program to fund or promote district cooling in the state. There are no existing district cooling systems in Arizona.

Contact: Mark Ginsberg
Director
Department of Commerce
1700 West Washington
5th Floor
Phoenix, AZ 85007
(602)255-3632

ARKANSAS

There are no district heating systems in Arkansas and no state efforts to fund or promote district heating development in the state.

Contact: Morris Jenkins
Deputy Director
Arkansas Energy Office
No. 1 State Capitol Mall
Little Rock, AR 72201
(501)371-1370

DELAWARE

There are no state-funded district heating projects in Delaware. The state strongly supported the city of Dover's application for a grant from the U.S. Department of Energy for a district heating feasibility study, which had favorable results and was completed in May 1988. DOE provided \$39,282 in funds for the project, and the city of Dover provided \$10,000. The city of Dover is in the process of issuing a request for qualifications for both technical and contract specs.

Contact: Robert Bartley
Assistant Director
Division of Facilities Management
Energy Office
P.O. Box 1401, O'Neil Building
Dover, DE 19903
(800)282-8616 (Delaware only)
(302)736-5644

Also: John E. French
Electrical Director
Electrical Department
860 Buttner Place
Dover, DE 19901

FLORIDA

Florida does not have a program to fund or promote district cooling in the state. The state received applications from Clearwater and Okaloosa County for financial assistance for district cooling projects, but chose not to fund the projects because of budget constraints and higher priorities.

Contact: Ken Barker
Program Manager
Institutional Conservation Program
Governor's Energy Office
The Capitol
Tallahassee, FL 32301-8047
(904)488-7400

GEORGIA

Georgia does not have a program to fund or promote district heating projects in the state. There are no existing district heating systems, according to Paul Burks, director of the state's Office of Energy Resources.

Contact: Paul Burks
Director
Office of Energy Resources
270 Washington Street, S.W.
Room 615
Atlanta, GA 30334
(404)656-5176

IDAHO

Idaho does not have a program to fund or promote district heating development in the state. The only state involvement is a DOE-funded project that monitors/analyzes the drawdown of a geothermal resource that feeds hot water to a district heating loop in Boise. In this project, which began operating in 1981, the state assesses the performance of the resource.

Contact: Bob Hoppie
Director
Energy Resources
Department of Water Resources
1301 North Orchard Street
State House Mail
Boise, ID 83720
(208)334-7900

ILLINOIS

Illinois does not have a program to fund or promote district heating development in the state.

Contact: John Shum
Program Manager
Building Efficiency Division
Department of Energy and Natural Resources
325 West Adams
Room 300
Springfield, IL 62704
(217)785-2800

INDIANA

Indiana does not have a program to fund or promote district heating development in the state, primarily because of budget limitations. According to David Zwiesler, Director of the Division of Energy Policy, speculations regarding energy prices raise doubts as to the economic feasibility of district heating development at a time when the cost of natural gas and electricity are relatively low.

Contact: David Zwiesler
Director
Division of Energy Policy
Indiana Department of Commerce
Indiana Commerce Center
One North Capitol, Suite 700
Indianapolis, IN 46204-2288
(317)232-8940

IOWA

There are currently no active district heating projects in Iowa, but the state has funded a study to look at the feasibility of a district heating system for Iowa State University. There may also be some locally-funded work in the future going on to explore district heating possibilities in Des Moines and Waterloo.

Contact: Larry Bean
Administrator
Division of Energy and
Geological Resources
Iowa Dept. of Natural Resources
Wallace State Office Building
Des Moines, IA 50319
(515)281-5145

Also: Tony Heiting
Same Address
(515)281-5585

Professor Eino Kainlauri
Iowa State University/Ames
290 College of Design
Ames, IA 50011
(515)294-7112

KANSAS

Kansas does not have a program to fund or promote district heating development in the state.

Contact: Emily Wellman
Director
Research & Energy Analysis
Kansas Corporation Commission
State Office Building
4th Floor
Topeka, KS 66612-1571
(913)296-5460

KENTUCKY

Kentucky does not have a program to fund or promote district heating development in the state, primarily because of budget limitations.

Contact: John Stapleton
Director
Energy Development Division
Kentucky Energy Cabinet
P.O. Box 11888
Lexington, KY 40578-1916
(606)252-5535

LOUISIANA

Louisiana does not have a program to fund or promote district cooling in the state.

Contact: Mary Mitchell
Director
Energy Division
Department of Natural Resources
P.O. Box 94396
Baton Rouge, LA 70804
(504)342-4534

MARYLAND

There are no DHC projects in Maryland that are funded or sponsored by the state, according to the Maryland Energy Office.

Baltimore has a downtown steam system that is owned and operated by Baltimore Thermal Energy Company, a private firm.

Contact: Donald Milsten
Director
Maryland Energy Office
Department of Housing and Community Development
45 Calvert Street
Annapolis, MD 21401
(301)974-3755

MAINE

There are no current district heating programs in Maine according to the Maine Office of Energy Resources. However, it does provide assistance on a case by case basis to any public official or private party who requests it. District heating in Maine is mostly confined to military bases, college campuses, several large institutions, and about 20 industrial facilities.

Contact: Harvey DeVane
Director
Maine Office of Energy Resources
State House, Station No. 53
Augusta, ME 04333
(207)289-3811

MASSACHUSETTS

Currently, Massachusetts is in the discussion stages concerning the introduction of district heating in various areas in the state. Feasibility studies may be conducted in the future based on preliminary district heating proposals. Also, there is a privately-owned steam heating loop in the city of Boston.

Contact: Irving Sacks
Program Manager
Executive Office of Energy Resources
100 Cambridge Street, Room 1500
Boston, MA 02202
(617)727-4732

MICHIGAN

There is currently no state involvement in district heating in Michigan. In the past, the state has contracted with MURRA, a consulting firm that conducted feasibility studies for a number of communities. The latest activity the state participated in was in Muskegon County, where the state co-funded a feasibility study for a district heating system for a HUD public housing project. The state contributed \$12,000, less than half of the total cost of the study, which concluded that the current price of gas does not make district heating an economically attractive option. According to Terry Black, Director of the Michigan Office of Energy Programs, because of the relatively low cost of gas and fuels at present, the state's involvement with district heating is "on hold" until there is a change in the energy market.

Contact: Terry Black
Director
Office of Energy Programs
Public Service Commission
Michigan Department of Commerce
611 West Ottawa Street, 3rd Floor
P.O. Box 30228
Lansing, MI 48909
(517)334-6267

Also: John Trieloff
Institutional, Commercial, and
Industrial Branch
Office of Energy Programs
(Same address as above)
(517)334-6258

MINNESOTA

Minnesota's district heating program, formerly run by the now defunct Department of Energy and Economic Development (DEED), is now dormant as a result of budget cuts and the low cost of natural gas in comparison to capital intensive district heating projects.

DEED, which functioned primarily to review and approve applications for financing new business and energy-related projects, was replaced in June 1986 when the state legislature dissolved DEED and created in its place the Public Facilities Authority.

The last district heating project funded by DEED was in the city of Virginia, for which DEED authorized a \$139,896 design loan to Virginia Public Utility for the conversion of a steam system to a hot water loop.

Since then, the only other project the state has been involved in is with Becker County for which the state provided a loan of \$250,000 to implement a small district heating system.

The state presently has no future plans to fund or sponsor district heating development.

Contact: Mike Roelofs
Director
Office of Municipal Energy Finance
Department of Public Service
900 American Center Building
150 East Kellogg Boulevard
St. Paul, MN 55101
(612)297-2545

MISSISSIPPI

There are no district heating systems in Mississippi and no state program to fund or promote district heating development.

Contact: Richard Destache
Energy Engineer
Mississippi Department of Energy & Transportation
Dickson Building
510 George Street
Suite 300
Jackson, MS 39202
(601)961-4733

MONTANA

The state has funded some feasibility studies for geothermal district heating, but there is presently no program to fund or promote district heating development in the state.

Contact: Van Jamison
Administrator
Department of Natural Resources and Conservation
1520 East 6th Avenue
Helena, MT 59620-2301
(406)444-6697

NEBRASKA

There is no state program to fund or promote district heating development in Nebraska. There are no existing district heating systems in the state, but plans are underway to develop one in Lincoln with the help of funds from the U.S. Department of Energy.

Contact: Larry Pearce
Deputy Director
Nebraska State Energy Office
P.O. Box 95085, 9th Floor
Lincoln, NE 68509-5085
(402)471-2867

NEW HAMPSHIRE

There is no state program to fund or promote district heating development in New Hampshire.

Contact: Dennis Hebert
Director
Governor's Energy Office
2 1/2 Beacon Street, 2nd Floor
Concord, NH 03301
(603)271-2711

NEW MEXICO

There is no state program to fund or promote district heating development in New Mexico.

Contact: Anita Lockwood
Deputy Secretary
New Mexico Energy & Minerals Department
525 Camino de los Marquez
Santa Fe, NM 87501
(505)827-5950

NORTH CAROLINA

There is no state program to fund or promote district heating development in North Carolina.

Contact: Carson Culbreth
Director
Energy Division
North Carolina Department of Commerce
430 N. Salisbury Street
Raleigh, NC 27611
(919)733-2230

NORTH DAKOTA

There is no state program to fund or promote district heating development in North Dakota.

Contact: Sherry Herman
Program Administrator
Energy Program
Office of Intergovernmental Assistance
State Capitol, 4th Floor
Bismarck, ND 58505

OHIO

There is no state program to fund district heating projects in Ohio, primarily because of cutbacks in federal funding, according to Paul Haytcher, Program Manager of the Office of Energy Conservation. In January 1988, the state considered initiating a program to promote district heating but had to discard the idea as a result of budget limitations.

Contact: Paul Haytcher
Program Manager
Office of Energy Conservation
Ohio Department of Development
30 East Broad Street
24th Floor
Columbus, OH 43266-0413
(614)466-6797

OKLAHOMA

There are no state-funded district heating or cooling programs in Oklahoma.

Contact: Steven Boggs
Program Representative
Community Affairs Development Division
Department of Commerce
301 NW 63rd Street
Oklahoma City, OK 73105
(405)521-3941

OREGON

Due to a lack of funds, there are no current studies being conducted in Oregon. However, in 1987 a HUD-sponsored Phase I feasibility study on district heating was conducted for the city of Springfield. This study found that district heating would be technically feasible but not economically feasible, and no other further action was taken.

Eugene's district heating system is currently operational, and there are smaller district heating systems on college campuses. The system serves two square miles in which steam service is provided to the downtown area, a college campus, a large hospital, a cannery, and a 16 acre greenhouse complex.

The Portland district heating system, judged too costly to run, was shut down in 1986. The Klamath Falls project, the state's only large geothermal district heating system, has been temporarily shut down in order to add improvements to the system.

The Klamath Falls facility, which is expected to re-open in mid-1989, will serve 14 city, county, state, and federal office buildings.

Contact: Alex Sifford
Geothermal Program Manager
Oregon Department of Energy
625 Marion Street, NE
Salem, OR 97310
(503)378-2778

SOUTH CAROLINA

The state has oil overcharge funds that could be utilized for district heating development, but no interest has been expressed by any of the localities. There are no DHC systems in the state, outside of those in some college campuses.

Contact: Bob Corcoran
Director of Planning
Division of Energy, Agriculture, and Natural Resources
1205 Pendelton Street
Suite 333
Columbia, SC 29201
(803)734-0352

SOUTH DAKOTA

There is no state program to fund or promote district heating development in South Dakota. The district heating systems that do exist—in Brookings, Watertown, and Phillip—are all city-funded and operated.

Contact: Steve Wagman
Energy Office
217 1/2 West Missouri
Pierre, SD 57501-4516
(605)773-3603

TENNESSEE

The state has not made any efforts to fund or promote district heating development in Tennessee ever since it assisted in the funding of the Nashville Thermal district heating system fifteen years ago.

Contact: Cynthia Oliphant
Director
Department of Economic and Community Development
Energy Division
320 6th Avenue North, 6th Floor
Nashville, TN 37219-5308
(615)741-667

TEXAS

There are no state-funded district heating projects in Texas. The district heating/cooling systems in Houston and San Antonio are co-funded by the cities and the U.S. Department of Energy.

Contact: Malcolm Verdict
Director
Energy Efficiency Division
Public Utility Commission
7800 Shoal Creek Boulevard
Suite 400 North
Austin, TX 78757
(512)463-1931

VERMONT

There is no state program to fund or promote district heating development in Vermont.

Contact: George Sterzinger
Commissioner
Conservation & Renewable Energy Division
Public Service Department
State Office Building
Montpelier, VT 05602
(802)828-2321

WEST VIRGINIA

There is no state program to fund or promote district heating development in West Virginia.

Contact: Judith Dyer
Chief Program Manager
West Virginia Fuel & Energy Division
Governor's Office of Community and Industrial Development
1426 Kanawaha Boulevard East
Charleston, WV 25301
(304)348-8860

WISCONSIN

There is no state program to fund or promote district heating development in Wisconsin.

Contact: Don Wiechert
Director
Traditional & Renewable Energy Fuel
Wisconsin Energy Bureau
P.O. Box 7868
Madison, WI 53707
(608)266-7312

